

PATENT

Atty. Dkt. No. AMAT/3083.P7/PDC/PDC/OR

IN THE CLAIMS:

Claims 4 and 18 were previously cancelled. Please cancel claim 2 without prejudice and amend the claims as follows:

1. (Currently Amended) A method for controlling an inspection of a surface of a substrate in a processing system, comprising:

receiving process data readings from at least one optical inspection system, wherein the data readings comprise optical signal signature information indicative of process uniformity on the substrate surface inspected by the at least one optical inspection system;

determining whether the process data readings exceed a predetermined value; and

if the data readings exceed the predetermined value, ~~determining that an unacceptable topographical condition exists on the substrate~~ transferring the substrate to an inspection platform.

2. (Cancelled).

3. (Previously Presented) The method of claim 1, wherein the optical signal signature information comprises at least one of substrate reflectivity information, specular information, spectral information, substrate defect information, substrate damage information, particle contamination information, alphanumeric character information, non-uniform plasma deposition information, and any combination thereof.

4. (Cancelled).

5. (Currently Amended) A method for controlling an inspection of a surface of a patterned substrate in a processing system, comprising:

receiving process data readings from at least one optical inspection system, wherein the data readings comprise optical signal signature information indicative of a

Page 2

375155_1

PATENT

Atty. Dkt. No. AMAT/3083.P7/PDC/PDC/OR

topographical condition on the patterned substrate surface inspected by the at least one optical inspection system;

determining whether an unacceptable substrate process condition exists; and

if the unacceptable substrate process condition exists, then initiating a system shut down sequence.

6. (Previously Presented) A method for controlling an inspection of a surface of a substrate in a processing system, comprising:

receiving process data readings from at least one optical inspection system, wherein the data readings comprise optical signal signature information indicative of a topographical condition on the substrate surface inspected by the at least one optical inspection system;

determining whether the process data readings exceed a predetermined value;

if the data readings exceed the predetermined value, determining that an unacceptable topographical condition exists on the substrate; and

determining the location of the substrate in the processing system to determine a routing sequence for the substrate, if it is determined that an unacceptable topographical condition exists on the substrate.

7. (Currently Amended) A substrate process inspection system, comprising:

a plurality of optical inspection systems, each being configured to perform an optical inspection process and each comprising a transmitter unit and a receiver unit; and

a controller system connected to the optical inspection systems and configured to:

(i) process optical signal information indicative of a topographical condition on a patterned substrate inspected by at least one of the optical inspection systems; and

(ii) determine a routing sequence for the patterned substrate in response to the topographical condition.

PATENT

Atty. Dkt. No. AMAT/3083.P7/PDC/PDC/OR

8. (Currently Amended) The system of claim 7, wherein each of the optical inspection systems is disposed on a processing system along a transfer path of the patterned substrate.

9. (Currently Amended) A substrate process inspection system, comprising:
a plurality of optical inspection systems, each being configured to perform an
optical inspection process and each comprising a transmitter unit and a receiver unit
~~The system of claim 7, wherein the receiver unit comprises~~ comprising at least one of a
charge-coupled device (CCD) camera and a spectrometer; and
a controller system connected to the optical inspection systems and configured
to:

(i) process optical signal information indicative of a topographical
condition on a substrate inspected by at least one of the optical inspection
systems; and

(ii) determine a routing sequence for the substrate in response to the
topographical condition.

10. (Original) The system of claim 7, further comprising an input unit for inputting control information utilized to operate the controller system.

11. (Currently Amended) A substrate process inspection system, comprising:
a plurality of optical inspection systems, each being configured to perform an
optical inspection process and each comprising a transmitter unit and a receiver unit;
and
a controller system connected to the optical inspection systems and configured
to:

(i) process optical signal information indicative of a topographical
condition on a substrate inspected by at least one of the optical inspection
systems; and

(ii) ~~The system of claim 7, wherein the controller system is configured~~
~~to determine the routing sequence for the substrate by: determining~~ determine

PATENT

Atty. Dkt. No. AMAT/3083.P7/PDC/PDC/OR

whether optical inspection data collected by the at least one of the optical inspection systems exceed a predetermined value; and if so, determining that an unacceptable substrate process condition exists.

12. (Previously Presented) The system of claim 11, wherein the optical inspection data comprises substrate reflectivity information, specular information, spectral information, substrate defect information, substrate damage information, particle contamination information, alphanumeric character information, non-uniform plasma deposition information, and any combination thereof.

13. (Previously Presented) A substrate process inspection system, comprising:
a plurality of optical inspection systems, each being configured to perform an optical inspection process at a first degree of optical resolution and each comprising a transmitter unit and a receiver unit;

an inspection platform configured to perform an optical inspection process at a second degree of optical resolution; and

a controller system connected to the optical inspection systems and the inspection platform and configured to:

(i) process optical inspection data indicative of a topographical condition on a substrate inspected by at least one of the optical inspection systems;

(ii) determine whether the optical inspection data collected by at least one of the optical inspection systems exceed a predetermined value;

(iii) if so, determine that an unacceptable substrate process condition exists; and

(iv) if the unacceptable substrate process condition exists, initiate a system shut down sequence.

14. (Previously Presented) A processing system, comprising a cluster tool and an optical inspection system comprising:

PATENT

Atty. Dkt. No. AMAT/3083.P7/PDC/PDC/OR

a plurality of optical inspection systems, each comprising a transmitter unit and a receiver unit, each being configured to perform an optical inspection process and each being disposed at different locations on the cluster tool;

a controller system connected to the plurality of optical inspection systems and configured to:

(i) process optical signal information indicative of a topographical condition on a substrate inspected by at least one of the optical inspection systems; and

(ii) determine a routing sequence for the substrate in response to the topographical condition; and

an input device configured to allow operation of the controller system by an operator.

15. (Previously Presented) A processing system, comprising a cluster tool and an optical inspection system comprising:

(a) a plurality of optical inspection systems, each comprising a transmitter unit and a receiver unit, each being configured to perform an optical inspection process at a first degree of optical resolution, and each being disposed at different locations on the cluster tool;

(b) an inspection platform connected to the cluster tool configured to perform an optical inspection process at a second degree of optical resolution;

(c) a controller system connected to the optical inspection systems and the inspection platform and configured to:

(i) process optical signal information indicative of a topographical condition on a substrate inspected by at least one of the optical inspection systems; and

(ii) in response to the topographical condition, cause execution of one of a plurality of subsequent substrate handling steps, wherein a first substrate handling step comprises transferring the substrate to the inspection platform for further optical inspection; and

PATENT

Atty. Dkt. No. AMAT/3083.P7/PDC/PDC/OR

(d) an input device configured to allow operation of the controller system by an operator; and

(e) wherein the cluster tool comprises a transfer chamber and a processing chamber connected to the transfer chamber, and wherein at least one of the optical inspection systems is disposed on at least one of the transfer chamber and the processing chamber.

16. (Original) The system of claim 14, wherein each of the optical inspection systems is disposed on a processing system along a transfer path of the substrate.

17. (Original) The system of claim 14, wherein the receiver unit comprises at least one of a charge-coupled device (CCD) camera and a spectrometer.

18. (Cancelled).

19. (Previously Presented) The system of claim 14, wherein the controller system is configured to determine the routing sequence for the substrate by:

determining whether optical inspection data collected by the at least one of the optical inspection systems exceed a predetermined value; and

if so, determining that an unacceptable substrate process condition exists.

20. (Previously Presented) The system of claim 19, wherein the optical inspection data comprises substrate reflectivity information, specular information, spectral information, substrate defect information, substrate damage information, particle contamination information, alphanumeric character information, non-uniform plasma deposition information, and any combination thereof.

21. (Previously Presented) A processing system, comprising a cluster tool and an optical inspection system comprising:

(a) a plurality of optical inspection systems, each comprising a transmitter unit and a receiver unit, each being configured to perform an optical inspection process at a

PATENT

Att. DKL No. AMAT/3083.P7/PDC/PDC/OR

first degree of optical resolution, and each being disposed at different locations on the cluster tool;

(b) an inspection platform connected to the cluster tool configured to perform an optical inspection process at a second degree of optical resolution;

(c) a controller system connected to the optical inspection systems and the inspection platform and configured to:

(i) process optical signal information indicative of a topographical condition on a substrate inspected by at least one of the optical inspection systems;

ii) determine whether optical inspection data collected by at least one of the optical inspection systems exceed a predetermined value;

(iii) if so, determine that an unacceptable substrate process condition exists; and

(iv) if the unacceptable substrate process condition exists, execute a shut down sequence to remove the substrate from the processing system; and

(d) an input device configured to allow operation of the controller system by an operator.